

Section on Education and Legislation

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WHEN IS EDUCATION NOT EDUCATION?

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The answer to the foregoing question might be placed in the same class as the answers to the famous queries, "Why does a hen cross the road?" and "When is a door not a door?" but looking at it from a practical standpoint let it suffice for the present to assume that an education is not an education when it does not lead to some definite end or when it fails to give the individual a return commensurate with the time and labor expended in its acquisition.

There is a tremendous spirit of unrest abroad at present affecting various educational lines, not only professional but also that which is commonly called preliminary education. Writers in a number of popular magazines have recently voiced their disapproval of existing conditions in the public schools where the blame seems to be laid upon the system and not upon the teachers, by critics alike from the laity and from the ranks of the educators themselves. A complete re-arrangement of our public school system has been prophesied for the near future and judging from the average results of the present system it is high time that some kind of a change is made. A system which, as the present one does, deals with wholesale promotions of students unfit to cope with the studies in the classes to which they are advanced and which pays no attention to the individual capabilities or requirements, is radically wrong and much of the lost motion and wasted energy could and should be utilized to advantage in a more profitable manner.

These troubles in the preliminary (grammar and high) schools and the lack of uniformity in these schools, not only in different parts of the country, but often in the same state, are the cause of many of our troubles in teaching pharmacy. Some public schools at the present time have their work arranged so that all study periods are provided for in the school roster and no home work is expected or even allowed.

Is it any wonder that we find boys of from seventeen to twenty years of age with high-school certificates in their possession who fail utterly when they are confronted with the necessity of adapting themselves to the new and strange condition of acquiring a large part of their knowledge from didactic instruction, which in order to be effective must be supplemented by reading?

Many of these boys make a fine showing at first; they are good memorizers but poor thinkers, but it is not enough to know a definition by heart, it is also

necessary to understand the *meaning of the definition*. This requires concentration, study and thought. He who is educated is he who can paraphrase a definition or change its verbiage while retaining its essential meaning, but how many are taught to alone see the necessity or advisability of doing that very thing. It sometimes takes a lot of looking up of unfamiliar words to fathom the meaning of a definition. One of the examples that I have in mind illustrative of this is a definition in one of the encyclopedic dictionaries of a family of crustaceans, which definition is as follows:

"A genus of siphonostemous copepods with bodies cycloform and more or less clipeate and with styliform mandibles in a suctorial rostrum."

Any person not familiar with the nomenclature of the particular branch of natural history involved would have to look up the meaning of most of the words comprising the definition and then in many instances would have to follow out other references which would be needed to give an adequate interpretation to the sentence. Yet there are boys, and some men too, who think that when they can glibly give the book definition or statement of a physical fact in technical language they have done all that is necessary in the mastery of the subject.

Several years ago, in order to test this very point, I gave to a freshman class a list of technical words, used in the text-books which they were studying and asked them to give definitions in their own words. These boys had a minimum of one year in a high school and many of them had full high-school certificates. Some of the definitions are given herewith as examples of how bad the raw material may be even when it is fully certified by supposedly competent authorities:

Supernatant:

- "The state of being abnormal."
- "The fineness of the mixture."
- "A certain point of heating not done by nature."
- "A liquid which has no particular value."
- "A reserve heat."
- "Not permanent."
- "The process whereby substances mix with one another."
- "More than can be held."
- "Strongly heated."
- "Substances that have absorbed too much water."

Solvent:

- "Anything that is soluble."
- "To preserve or keep a thing."
- "Any article that can be decomposed by means of a liquid."
- "A substance that forms a change in a liquid to produce another product."

Buoyant:

- "A liquid moving upward and downward."
- "The amount which is left over."
- "Having a tendency to shift."

Viscid:

- "Sour."
- "A liquid that is able to be seen through."
- "A turbid liquid."
- "Cloudy."
- "A colorless liquid."
- "Not altogether clear."
- "Not very agreeable, as a viscid odor and taste."
- "Brilliantly clear, as alcohol."
- "A liquid that flows easy."

Disintegrate:

- "To place between the molecules of a substance."
- "Mixing two or more powders."
- "To mix with."
- "To clear or make transparent."
- "To tairé (sic) a vessel."
- "The separation of one substance from another substance."
- "To take one substance away from another."
- "Reducing to a paste."
- "To dig out."
- "The process of separating large and fine particles."
- "To separate particles."

Subside:

- "The under side."
- "A change in a liquid during boiling."
- "Ceasing to grow less."
- "The coating of a substance in a container."
- "To give way or surrender."
- "To allow."

Instances might be multiplied like those quoted but enough have been given to illustrate the deplorable condition of our present preliminary educational schools. The words quoted above, with one or two exceptions, are such as are used daily in current literature.

To further illustrate that it is the system and the habit of mind that are at fault and that the labor of teaching is rendered doubly difficult when dealing with raw material of that type, the following definitions are culled from papers submitted by the same class one month later, after having been lectured to and quizzed upon the subject.

The question in this instance was the Purity Rubric or rather the definition of it. The vagueness of the impression made, as I say, after repeated efforts to explain the subject, is well illustrated by the following few, which of course represent less than 10 percent of the class but which are enough to make a conscientious teacher sick at heart.

"Purity Rubric is the doses in the U. S. P. of different ingredients and it explains the color of different preparations."

"Purity Rubric is the language in general used by the people of a country."

"Purity Rubric is the sterilization of the drug."

"Purity Rubric is a drug obtained from the mineral kingdom. It is a very poisonous drug."

"Purity Rubric is pure red."

One student calls it a purified rubric.

"Purity Rubric is that plant that has been purified so it could be used as a medicine, all waste being taken out and absorbed, cleaned and ready for use for the pharmacist. It sometimes occurs as a powder or as whole, red color, but somewhat slight odor. It is used as a medicine in some cases prescribed by the doctor."

"Purity Rubric is the percentage of the purity of a substance in the U. S. P., and this substance when manufactured must always contain this amount or a fine of \$57 will be imposed."

"Purity Rubric tells what the color of the pure drug should be and whether it is poisonous."

"Purity Rubric is the purity of strength."

"Purity Rubric is the amount of material left after the material was examined and all the impurities taken out. The remainder is called the purity rubucant."

Another point illustrative of the same unfit condition of many of the students to hold certificates from the preliminary schools is the frequency with which words that occur in the question are misspelled in the answer. The teaching of spelling seems to be a lost art in the schools at present.

When it comes to arithmetic conditions are even worse than those just

exemplified. Students who come from high schools are frequently proficient in algebra and geometry but the rule of three or simple proportion and percentage are wrapped in obscurity so far as their knowledge, or practical application of them is concerned. Problems in specific gravity might as well be given in Sanskrit, for the answer is often given in terms which indicate that the constant has either been determined in interstellar space or at a point about the earth's center. It is so difficult to teach pupils that the specific gravities of all official liquids and solids range between about 0.6 and 14.0.

I am firmly of the opinion that owing to some vital defect in our present system of preliminary education a large number (not a majority, of course), of holders of certificates entitling them to study pharmacy, by reason of their preliminary qualifications, are far inferior to many of the applicants who have struggled to educate themselves but who are debarred on account of their inability to pass the examinations which are provided for such applicants.

Our present day systems, both in preliminary and in professional work, place too much reliance upon certificates of competency and upon examinations. The woods are full of examiners who could not pass their own examinations (or others of equal severity) if put to the test, and it is time that some common sense provision is made making allowance for the man who is qualified in the essentials, i. e., the three R's and common sense, but is debarred because he cannot correctly parse a sentence from Milton's "Paradise Lost," according to the system of some particular grammarian, or give the chronological succession of the rulers of England, or give a synopsis of some classic (?) which nobody reads except for the purpose of boning up for some examination. The world is full of holders of certificates, diplomas and degrees of all kinds who are not educated anywhere near to the requirements of those certificates, diplomas and degrees and it is time to realize that true education can lie outside of all these external and frequently misleading credentials.

LEGISLATION RELATING TO PRELIMINARY EDUCATION FOR PHARMACY LICENSURE.

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Some laws have been enacted making certain preliminary educational qualifications compulsory for those who enter pharmacy schools or engage in the business of pharmacy. The tendency in several States at the present time is to amend pharmacy laws or school codes and provide such preliminary requirement for pharmacy licensure.

No one having experience in examining persons who apply to the boards of pharmacy for registration will deny that the deficiency exhibited in the work of many applicants is due largely to lack of proper preliminary training. The truth is oft unpleasant, but that jurist who declared recently that druggists are